

Executive Development

Bariatric Transport Priorities; Selecting the Proper Equipment

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CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that appropriate credit is given where I have used the language, ideas, expressions or writings of another.

Signed: _____

Abstract

This research identified equipment options for bariatric patients. The Mason City Fire Department (MCFD) experienced increasing numbers of bariatric patients and did not have the correct equipment to manage these patients, increasing the number of work-related injuries. Equipment options were explored and descriptive research identified bariatric patient equipment needs. A material review was completed, employee health reports were examined and a survey instrument was utilized. Results indicated most respondents do not have the correct formal training or equipment to provide proper bariatric care, although most respondents have work-related injuries directly related to bariatric care. Recommendations included formal bariatric training, the purchase of bariatric diagnostic and transport equipment and a revisitation in one year to determine any necessary remediation.

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Introduction

As fire departments across the nation continue to be a resource to their constituents, they often face challenges during day-to-day operations that pose harm to their staff. According to a U.S. Surgeon General's report, more than 61% of adults are overweight and 27% of them, which equates to 50 million people, are obese (Greenwood, October 2004). Perhaps the newest star on the horizon for firefighter injury is encountered during the treatment and transportation of the bariatric patient. A request to move the patient that weighs from 500 to 800 pounds can overwhelm even the best-prepared EMS system (Boatright, Fall 1999).

As Americans continue to "super-size", the need to enter a new paradigm of patient care and transport of a growing population becomes acutely apparent. In the Midwest, the growing trend of significantly overweight patients, often in excess of 600 pounds, has become troublesome. Local emergency medical services (EMS) providers are scrambling to invent new ways to appropriately treat and transport these patients, while awaiting capital purchases in next year's budget to purchase specialized bariatric transport equipment. The standard equipment in the ambulance industry is simply not adequate to accommodate these larger and heavier patients (American Medical, 2003).

The problem is that the Mason City Fire Department is experiencing an increased number of morbidly obese, or bariatric patients and does not have the correct equipment to manage these patients. This lack of equipment is attributed to an increased number of work-related injuries. The purpose of this research is to explore bariatric transport equipment options and provide MCFD administration with potential solutions to decrease the number of work-related injuries

due to bariatric patient care and transport. Descriptive research will be used to answer the following questions:

1. How will the addition of the correct equipment reduce the number of work-related injuries on the MCFD?
2. What are the special needs of the bariatric patient during pre-hospital care and transport?
3. What equipment are other emergency medical services agencies using to minimize work-related injuries during bariatric patient care and transport?
4. What are the contributing factors to work-related injury during transport and care of bariatric patients?

The research procedures will utilize a survey instrument completed by fellow EMS agencies to examine what parameters are in place within their organization to reduce work-related injury due to bariatric patient care and transport. Secondly, examination of injury reports will be completed to determine the most common mechanism of injury suffered by MCFD staff, followed by a comprehensive review of printed and electronic resources to determine the special needs of the bariatric patient during pre-hospital care and transport.

Background and Significance

The Mason City Fire Department is the largest career fire department in north-central Iowa, employing 44 sworn personnel and a civilian clerk, and represents Local 41 of the International Association of Firefighters. Mason City is a regional retail and industrial hub and is perhaps best known as the birthplace of Meredith Willson, of “The Music Man” fame. Mason City is also adjacent to Clear Lake, Iowa and the famous Surf Ballroom, which served as the final audience for Buddy Holly, J.P Richardson and Ritchie Valens before their fatal plane crash.

MCFD is responsible for fire suppression and advanced life support (ALS) to Mason City and Cerro Gordo and Worth counties in Iowa, as well as maintaining a hazardous material / technical rescue team which responds to a nine-county area of Iowa. In 2005, MCFD responded to over 5,000 EMS assignments and 1,000 fire assignments from fire headquarters in Mason City. MCFD is composed of 3 battalions of 13 firefighters with a support and administrative staff compliment of 6. During each 24-hour shift, MCFD staffs 2 ALS engine companies, a truck company and 2 medical companies and responds to an average 14 alarms.

A defined need for specialized medical equipment to successfully treat and transport patients of excess weight, or bariatric patients, has become apparent during daily EMS operations in Mason City. The word bariatric comes from the Greek word “barros”, which translates to heavy or large. The standard equipment currently in use by MCFD is not suitable to

accommodate the larger and heavier patient, and has subsequently become a safety hazard for patients and the crews that transport them.

A substantial increase in the amount of morbidly obese patients has been documented in northern Iowa and the incidence of firefighter injury to MCFD staff, specifically back injuries while lifting and transporting these patients, has increased dramatically. This increased injury rate has become troublesome for MCFD command staff, as well as local government officials, and has prompted this research. Currently, the EMS command staff has been tasked to investigate the problem and arrive at immediate and long-term goals to decrease firefighter injury. MCFD command staff feels that the department mission of “to serve and protect-safely” is jeopardized, and the results of this research can be of tremendous value to other departments facing the same dilemma. It is the opinion of MCFD administrators that if this problem is not addressed soon, it may have a deleterious effect on future staffing of the department and increased workman’s compensation and insurance costs.

MCFD currently uses Stryker transport cots, which require a minimum of 2 personnel to operate. In addition to this, a large reinforced tarp is used to move very obese patients and was hastily purchased to deal with the immediate problem. Finally, at the discretion of the scene commander, more substantial rescue equipment, involving stokes-type litters and mechanical advantage systems made with climbing rope and hardware, can be utilized.

In Mason City, fire department staff has suffered a myriad of injuries directly related to increased effort from bariatric care. Due to federal patient confidentiality laws, only limited

information was gathered from MCFD staff reflecting these injuries, but injury records have included falls, back injuries, upper extremity strains and crush injuries. At the time of this document, bariatric patients have suffered no injuries while under MCFD care due to the inability to physically handle the patient. While reviewing MCFD employee accident records, further delineation of the most common injuries can be appreciated. Falls were commonly caused by loss of balance and loss of control of the patient, causing over-compensation by the rescuer. Back injuries were most common during raising and lowering the ambulance cot from the ground level. The majority of upper extremity injuries occurred as the provider hyper-extended their reach while placing the patient on the cot. Finally, distal extremity trauma was reported as the loaded cot pinned hands and feet between the cot and rigid stationary objects such as doors and walls. This also resulted in several minor soft tissue injuries suffered by MCFD staff.

This research project will help resolve the identified problem of MCFD firefighter injury related to bariatric patient transport and will enable MCFD command staff to make informed decisions regarding specialized bariatric equipment purchase and implementation. Due to the ability of this research to enhance firefighter safety, it fulfills one of five objectives of the U.S. Fire Administration (USFA) (2003) to “respond appropriately in a timely manner to emerging issues”(p. II-2). In addition, this applied research project will benefit the fire service by meeting a goal for students in the National Fire Academy’s *Executive Development* (ED) Course. This goal empowers the ED student to “Develop and integrate change management and leadership techniques necessary in complex organizations” (USDHS, 2006, p. SM 12-4).

Literature Review

A comprehensive literature review was completed utilizing several sources including EMS and fire trade journals, electronic sources and news media. This review has identified several considerations regarding bariatric patient transport.

Earlier this year, the U.S. Surgeon General stated that an excess of 60% of all Americans are overweight and 27% are obese. During the next century, this recent shift is expected to overwhelm the current healthcare delivery system. (Greenwood, October 2004). Specific modalities during EMS care will be noticeably affected. Medications supplied to paramedics are packaged according to years of averaged patient weights. Treatment of the bariatric patient with the same unit dose could potentially drain medication kits on a single response. Equipment has also historically been sized to fit the average sized patient. As bariatric patients are encountered, cervical collars are unable to be properly fitted, blood pressures are unable to be auscultated due to improper sizing and splints simply do not have securing straps long enough to immobilize the extremity (Roline & Twedell, April 1998).

EMS providers are legally required to treat the bariatric patient as they would any request for emergency care. The “duty to act” clause found in most state regulations clearly states that leaving a sick person at the scene due to their size is grounds for abandonment, not to mention a violation of the Americans with Disabilities Act (Boatright, Fall 1999). Physicians must modify their examination rooms to accommodate patients weighing in excess of 500

pounds, requiring heavier examination tables, wider doorways and heavy-duty wheelchairs. It is estimated that a hospital can expect to spend in excess of \$400,000.00 a year in treatment, equipment and supply costs to accommodate bariatric patients. Ultimately, this cost is passed to the consumer. Recently, a bariatric patient weighing in excess of 500 pounds had to be emergently transferred by ambulance to another hospital because they exceeded the 300-pound weight limit on a portable scanner ("No Longer a Sideshow," 2005).

An important consideration of the bariatric patient is just that, the patient. The dignity of the patient must remain an important consideration during assessment and interventions. Recently, a patient weighing in excess of 700 pounds detailed his experience during a routine ambulance transport:

The next challenge involved getting me out of the house. After setting me on my left side, the firefighters tried to use a backboard to transport me out of the house and to the ambulance. My weight broke two backboards. From my misty consciousness, I sensed them discussing how to get me out of the room. I have no recollection of the time span, nor who came up with the solution, but I was finally rolled onto a tarp and partially raised off the floor and brought to the sliding glass door. The door was removed and I was passed out of the door, hand to hand, to other volunteers waiting on the outside (Constantino, November 1996).

Upon arrival at the receiving hospital, the patient was found to have a very large abrasion on his back, secondary to being dragged on the tarp, resulting in infection and scarring. Fortunately, it

is not the practice of every EMS provider to use such primitive means of patient packaging and egress. However, creativity shines when crews are placed in such precarious situations, as is demonstrated by one agency utilizing a crane to lower a 1,000 pound patient from a third floor apartment to a waiting flat bed truck (Boatright, Fall 1999). Similar accounts describe specialty technical rescue teams to assist EMS crews with bariatric patients. One instance in Alabama resulted in 16 rescuers from three agencies to maneuver an 800 pound man out of a 100 square foot room, utilizing technical rescue equipment commonly used in high angle and rough terrain evolutions (Beebe & Heightman, January 2002). Fortunately, manufacturers are eager to introduce new bariatric transport equipment. Specialized bariatric equipped ambulances are emerging in Europe and the United States, utilizing steel ramps and electric winches to move super-obese patients into the patient compartment.

A Nebraska patient, weighing over 1,000 pounds, seeks to spread the message that state governments should buy and maintain bariatric ambulances, along with the ratification of policies recognizing that bariatrics is a matter of survival, not simply cosmetics. At the present time, this patient relies on a specially equipped bariatric ambulance from South Dakota to transport him to medical appointments (Joe Duggan, 2005). American Medical Response (AMR), an EMS provider in Portland, Oregon has introduced a bariatric ambulance that will transport patients weighing 1,000 pounds. This ambulance not only utilizes the ramp and winch system mentioned previously, but a specially built ambulance cot as well. This ambulance averages two calls per day in the Portland area and enlists specially trained paramedics for staffing (American Medical, 2003).

Similar ambulances have been placed into service in Minnesota. Across the ocean, St. John Ambulance in England utilizes a similar vehicle for bariatric transport, a result of increasing demand for such a vehicle across the United Kingdom. The aim of the St. John Ambulance is to provide the best care for the bariatric patient, ensuring dignity and respect regardless of their special needs (South Yorkshire, 2006). Stryker Medical Corporation, a manufacturer of patient handling equipment, has recently introduced a bariatric transport cot capable of supporting 1,600 pounds. Patient moving devices such as these are common on bariatric ambulances and are finding their way to EMS providers across the nation (Marc Lallanilla, 2006). Ferno Medical recently introduced several devices to assist with the patient weighing in excess of 1,100 pounds. These devices include bariatric pull cables, transfer sheets and a heavy-duty frame cot with a hydraulic lift mechanism (Ferno, 2006).

Finally, reports are starting to document what exactly is causing employee injury. Most employee injuries encountered during interaction with bariatric patients are realized during transferring and transporting a patient during EMS responses. Statistics show EMS personnel tend to be injured while bending and lifting patients, especially during undesired patient movements (Jems, 2006). The most common injury related by EMS staff are back injuries, realizing that people who weigh in excess of 500 pounds cannot always ambulate and need assistance with daily living tasks (Pugh, 2005). Routinely, special arrangements are made with fellow emergency responders to assist during bariatric encounters.

AMR paramedics in Las Vegas respond to patients weighing in excess of 600 pounds several times a month and rely on additional staff for assistance. In the past six months, these

paramedics have requested additional assistance on at least 75 occasions, most requiring at least 4 or 5 paramedics to move the patient (Wells, 2006). Southwest Ambulance Service has designed two bariatric ambulances as a result of increased employee injuries. Southwest also maintains a list of addresses with their dispatchers in a pre-planning effort to keep the ambulances geographically accessible for patients (Lois M. Collins, 2006). Kentucky paramedics face the sixth highest obesity rate in the United States, which has prompted special measures for bariatric patient transport. Concerned for employee safety and injury reduction of its staff, Yellow Ambulance of Louisville, Kentucky has refurbished an ambulance to meet the needs of the bariatric patient and is used primarily for scheduled physician appointments (Maureen Kyle, 2006). Extremely obese patients require specialized medical equipment to facilitate safe and efficient transfer and risk managers are recognizing the potential for increased employee injury in the face of increased bariatric responses. Findings show staff must be educated to meet the unique clinical needs associated with these patients and the appropriate measures must be taken if an appreciable reduction in employee injury is desired.

Procedures

This research project consisted of an examination of injury records of the Mason City Fire Department to determine the types, frequency and causes of firefighter injuries related to the treatment and transport of bariatric patients. All results were tabulated from the employee's health records and were kept in strict confidence, assuring compliance with federal privacy and protected health information statutes.

A survey was distributed to the twenty-five largest career fire departments in Iowa that provide EMS. A comprehensive list of these agencies was derived from a service list obtained from the Iowa Professional Fire Chiefs Association. The purpose of this survey was to determine the number of bariatric patient interactions, frequency of employee injury related to bariatric patient interaction, what equipment they have in place to treat and transport bariatric patients and how the addition of specialized bariatric equipment has reduced the impact of injury related to bariatric care. No attempt was made to include all groups related to this topic. This survey was developed utilizing clear, non-biased closed-ended and forced choice questions, assuring the most accurate responses from the participants. All responses were held in confidence and were anonymous.

Each survey was directed to the Chief of the represented department, asking for their timely response. In order to derive a 95 percent confidence level, a survey sample size of 24 agencies was calculated. The survey instrument was mailed to each of the 25 agencies in August 2006. Each survey included a cover memo stating the required demographic information of its author, the purpose of the survey, instructions for completion and a return date, as well as statements regarding the sharing of the information received and its anonymous content. An example of the cover letter can be found under Appendix A and the survey instrument can be found under Appendix B. All data received were compiled and examined to correlate the incidence of employee injury within MCFD as compared to recommendations contained in current literature. This was used to develop a course of action to minimize MCFD employee

injury and prevent further occurrences of MCFD employee injury related to interaction with bariatric patients in the pre-hospital setting.

Results

Research Question 1. What are the special needs of the bariatric patient during pre-hospital care and transport?

It is the general consensus of both the medical community and bariatric patients that several special considerations need to be met during transport and treatment. The literature reviewed indicated that certain steps needed to be taken in preparation for bariatric response. If specialized bariatric transport ambulances are available for transports, they should be summoned simultaneously with emergency providers, yet can be used as a sole source of transport during a non-emergent response. Literature data also strongly supports the use of specialized assessment and diagnostic equipment during treatment. (Beebe & Heightman, January 2002). Items such as over-sized blood pressure cuffs and electronically enhanced stethoscopes can properly assess bariatric patients. Splinting and packaging morbidly obese patients can be challenging, utilizing extra large splints and extra long straps to accommodate the patient.

The survey instrument was used to answer specific questions related to question one, including “How frequently do your responses include morbidly obese or bariatric patients?” The majority of the respondents to the survey (31.2 percent) stated that they respond to less than five calls per month resulting in bariatric patient care, with half of the respondents (50 percent) citing

5-10 calls per month. Nearly one-fifth (18.7 percent) of respondents reported 10-20 bariatric responses per month, with no respondents reporting in excess of 20 bariatric calls per month.

Secondly, the survey question “If assistance is required during treatment or while transporting a bariatric patient, who provides assistance?” resulted in the majority (75 percent) of respondents utilizing additional firefighting staff to augment EMS staff during bariatric transport, with additional EMS staff being listed as the second choice (43.7 percent). One respondent each chose law enforcement personnel and technical rescue staff for assistance during bariatric transport (0.6 percent) and no respondents utilized mutual aid companies for assistance.

Research Question 2. What equipment are other emergency services agencies using to minimize work-related injury during bariatric patient care and transport?

According to current trade journals and media sources, a broad range exists with some EMS providers having virtually no specialized bariatric equipment, to others that operate dedicated bariatric transport vehicles utilizing electric winches and steel ramps for ease in loading bariatric patients (Maureen Kyle, 2006). Again, the survey instrument served as an integral part of the answer to this question and posed several specific questions regarding bariatric equipment to the respondents. When asked if they had a specialized bariatric ambulance in service, no respondent indicated the existence of such a unit in Iowa. Several respondents, however, had “bits and pieces” of bariatric patient care and transport equipment. The majority of respondents (75 percent) stated they did not have a hydraulic lift cot in service within their organization, and only one respondent (6.25 percent) utilized a specialized bariatric

transport cot. Just over half (56.25 percent) of respondents stated that they have a tread system on their cots and/or stair chairs to aid in moving bariatric patients, while half (50 percent) utilized a specially designed soft stretcher, such as an evacuation tarp, to move bariatric patients. The survey also indicated that the majority of responders (81.25 percent) still find the standard long backboard acceptable to move bariatric patients and over half (68.25 percent) of respondents utilize extra large diagnostic equipment while assessing the bariatric patient.

Research Question 3. What are the contributing factors to work-related injury during transport and care of bariatric patients?

The survey indicated that the majority of respondents had not received formal training regarding bariatric patient care and transport (81.25 percent), but had completed standard ergonomic training (68.25 percent). Almost every respondent (93.75 percent) reported staff injury related to the care and transportation of bariatric patients. Survey results clearly illustrated that the majority of injuries suffered by EMS staff (93.75 percent) occurred to the lower back, with extremity injuries showing up in one-quarter (25 percent) of agencies that responded to the survey. Specifically, injuries were predominately encountered while moving the bariatric patient to the ambulance (81.25 percent) with patient packaging and preparing the bariatric patient for transport accounted for the remainder of staff injuries (18.75 percent). No survey respondents or MCFD staff reported injuries as a result of assessing the bariatric patient, unloading the patient from the ambulance or transferring the bariatric patient to the emergency room bed. Staff injury reports completed by the Mason City Fire Department were remarkably consistent with the results reflected by the survey and followed survey trends without exception.

Research Question 4. How will the addition of the correct equipment reduce the number of work-related injuries on the MCFD?

When survey respondents were asked if the introduction of specialized bariatric treatment and transport equipment had decreased the number of staff injury reports, the majority (68.25 percent) stated that it had. Clearly, literature suggests that if the proper bariatric transport equipment is added to the inventories of EMS agencies, a marked decrease in the number of reported injuries directly related to bariatric patient care and transport will occur (Jems, 2006)

Discussion

It is not surprising to find a strong correlation between sources found in literature and survey results regarding the proper equipment to be used during responses and treatment of the bariatric patient. A clear indication of specific diagnostic equipment for bariatric use, such as over-sized blood pressure cuffs, cervical collars and extra-long straps for splints was present (Roline & Twedell, April 1998). First hand accounts of not only the physical trauma associated with bariatrics, but the emotional scarring as well blamed egress from a home by means of multiple engine crews, a truckload of equipment and broken back boards (Constantino, November 1996). Even as bariatric care seems to be a new paradigm of pre-hospital treatment, manufacturers and EMS providers have risen to the challenge across the nation. From the introduction of specialized transport cots, capable of lifting and transporting patients that weigh

from 700-1500 pounds (Ferno, 2006) to specialized ambulances, equipped with electric winches and steel ramps (American Medical, 2003), the advent of specialized bariatric equipment is at hand.

Unfortunately, injury reports directly related to the transport and treatment of bariatric patients continue to rise. The survey component of this project illustrated the need for proper, formal training regarding bariatric patient encounters. Reports showed that a stunning 81% of providers had not received proper bariatric training, which correlated closely to 93.75 % of EMS providers polled stating that they have recorded provider injury as a direct result of bariatric patient care and transport. The survey also showed that the majority of injuries occurred while taking the patient to the ambulance and were predominately associated with low back injury. It was interesting to note that the majority of the same providers that were injured had participated in a formal back ergonomic program within their department, clearly illustrating the separation between common back ergonomics and bariatric transport. Sources also indicated that ergonomic training could assist the rescuer with the reduction of injury, but still list the low back as the most common site of injury (U.S. Fire Administration, 1996).

This project clearly indicated delineation between the routine transport involving an obese patient and the transport of bariatric patients. Increasing numbers of the super-obese have increased airline rates and forced casket manufacturers to “super-size” their product (Marc Lallanilla, 2006), at the same time created a need for more substantial equipment in physicians offices and hospitals, including everything from heavy-duty examination tables in physicians offices to larger Computerized Tomography (CT) Scanners in hospitals (“No Longer a Sideshow,” 2005). With that being said, it seems unrealistic to presume that pre-hospital

treatment and transport of the bariatric patient can continue to follow the same modalities as have been practiced for years. The data clearly indicates that the bariatric patient is clinically fragile and requires specialized diagnostic, treatment and transport equipment to make their course of pre-hospital care successful (“Survey Tool Reveals,” 2005).

Recommendations

The research findings encountered in this project clearly and urgently illustrate the need for not only realizing the specialized nature of the bariatric patient, but the inherent risk of pre-hospital providers caring for these super-obese patients. Clearly, MCFD needs to convince its administrative staff, based on research findings and current industry trends, to begin a process of purchasing specialized bariatric patient care equipment. MCFD closely follows national trends regarding its current bariatric treatment and practices and unfortunately also mirrors injury reports following bariatric care. Perhaps the addition of the municipal Safety Director to this process would place the emphasis of this problem on the City, rather than solely on the fire department, providing for a larger appropriation of initial start-up funding sources, especially since local law enforcement staff, who are also city employees, are often utilized for lifting assistance during bariatric emergencies.

First, the author proposes that MCFD begin a multi-step implementation process regarding bariatric care, which would begin with formal training in ergonomic practices, augmented with prescribed bariatric care specialties. This can be accomplished with the regional medical center physical and occupational therapy staff for a fee-for-service. Secondly, while

grasping the principles of bariatric care, initial bariatric equipment vendor contacts can be made and perhaps a MCFD steering committee can be convened.

Second, the author suggests initial purchases of bariatric equipment consisting of specialized diagnostic equipment, such as over-sized blood pressure cuffs and electronic stethoscopes, and progressing to durable and non-durable medical equipment, such as extra large cervical collars and straps. An initial suggestion might be the initial purchase of two hydraulic-assisted transport cots for service in the first-due ambulances. This would allow the majority of patients to be transported with the assistance of a powered cot and would also provide the accessibility of a powered cot in the event of an inter-facility transport. Lastly, a recommendation for a revisitation of the department's bariatric practices after one year, followed with subsequent examinations of employee injury reports would be in order, to determine the effect that formal bariatric training and specialized equipment has made at MCFD. Following this examination, the department can make an informed decision regarding additional equipment, such as specialized bariatric ambulance specifications.

The additions of bariatric diagnostic equipment will not only provide the staff with enhanced diagnostic capabilities, but will place the bariatric patient at ease, reducing the worry about misdiagnosis or limitations of sub-standard equipment. The augmentation of power-lift cots will also provide staff with an increased level of security, safety and capability when lifting the bariatric patient and moving him or her to the waiting ambulance, therefore realizing a decrease in the number of work-related injuries to MCFD staff during the most dangerous segment of care.

Finally, the author would suggest that the same methods be used for subsequent researchers looking for a solution to injury of staff directly related to bariatric emergencies. Perhaps additional tools, such as personal interviews with equipment vendors, elected officials from both EMS and fire service organizations and local medical professionals could provide insight to the acute need for bariatric equipment for pre-hospital providers. Bariatric patient transport is an evolving process, and the need for both specialized training and equipment is a modality that is likely to evolve as well. The fire department or EMS agency that insists on both specialized bariatric training and equipment will be the agency that realizes a sharp decline in the number of work-related injuries to it's staff, and a higher level of satisfaction from both employees and patients.

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Appendix A
Cover Letter to Select Iowa Fire Departments

Dear Chief:

The Mason City Fire Department is completing an applied research project to determine the current operational guidelines and equipment that you have in place to respond to incidents involving morbidly obese or bariatric patients.

The objective of this project is to determine if your department has guidelines in place to deal with the special needs of the bariatric patient and reduce employee injury during bariatric responses, and if so, what specialized equipment and procedures serve this role.

The results of this research will facilitate the implementation of specialized equipment within our department and will enable our command staff to make informed decisions regarding injury prevention and patient care related to bariatrics.

We would ask you to complete this survey on behalf of your department. The survey should be completed in as little as five to ten minutes. Please be assured that your responses will be held in confidence.

Thank you for completing this survey. Please direct any questions you may have to Captain Dave Johnson, Mason City Fire Department at djohnson@masoncity.net

Appendix B

Survey for Iowa Fire Departments Regarding Bariatric Patient Care

Survey completion instructions:

Please select only one response from each question to complete this survey. Each selection should most accurately reflect your view and be the most appropriate response. After the survey is completed, place the survey in the enclosed SSAE and return it as soon as possible.

Bariatric Patients

How frequently do your responses include morbidly obese or bariatric patients?

- In excess of 20 calls/month
- 10-20 calls/ month
- 5-10 calls/month
- Less than 5 calls/month

If assistance is required during treatment or while transporting a bariatric patient, who provides assistance?

- Additional EMS staff
- Additional Firefighting staff
- Law Enforcement
- Technical Rescue staff
- Mutual aid companies

Has your staff received specialized formal training regarding bariatric patient care?

- Yes
- No

Equipment

Do you currently have an ambulance specifically designed for bariatric transport?

- Yes
- No

Do you currently have a hydraulic lift cot in service?

- Yes
- No

Do you currently utilize a bariatric transport cot?

- Yes
- No

Do you currently utilize a tread system on your cots or stair chairs?

- Yes
- No

Do you currently utilize a specially designed soft stretcher, such as an evacuation tarp?

- Yes
- No

Do you utilize standard backboards to move bariatric patients?

- Yes
- No

Do you have patient diagnostic equipment, such as blood pressure cuffs, that are applicable for use with bariatric patients?

- Yes
- No

Staff Injury

Do you encounter staff injuries related to treating and/or transporting bariatric patients?

- Yes
- No

If you have introduced specialized bariatric equipment, has this introduction decreased the number of staff injuries related to bariatric care?

- Yes
- No

Where have staff injuries resulting from interaction with bariatric patients occurred?
(Circle all that apply)

- Neck
- Upper back
- Lower back
- Extremity

At what point during treatment of the bariatric patient do most injuries occur?

- Assessment and treatment at the patients side
- Patient packaging
- Moving the patient to the ambulance
- Unloading the patient
- Transferring the patient to the emergency room bed

Do your staff members receive ergonomic training?

- Yes
- No

Appendix C

Survey Results

How frequently do your responses include morbidly obese or bariatric patients?

	Response Total
In excess of 20 calls/month	0
10-20 calls/month	3
5-10 calls/month	8
Less than 5 calls/month	5
<u>Total Respondents</u>	<u>16</u>

If assistance is required during treatment or while transporting a bariatric patient, who provides assistance?

	Response Total
Additional EMS staff	7
Additional firefighting staff	12
Law enforcement	1
Technical rescue staff	1
Mutual aid companies	0
<u>Total Respondents</u>	<u>16</u>

Has your staff received specialized formal training regarding bariatric patient care?

	Response Total
Yes	3
No	13
<u>Total Respondents</u>	<u>16</u>

Do you currently have an ambulance specifically designed for bariatric transport?

	Response Total
Yes	0
No	16
<u>Total Respondents</u>	<u>16</u>

Do you currently have a hydraulic lift cot in service?

	Response Total
Yes	4
No	12
<u>Total Respondents</u>	<u>16</u>

Do you currently utilize a bariatric transport cot?

	Response Total
Yes	1
No	15
<u>Total Respondents</u>	<u>16</u>

Do you currently utilize a tread system on your cots or stair chairs?

	Response Total
Yes	9
No	7
<u>Total Respondents</u>	<u>16</u>

Do you currently utilize a specially designed soft stretcher, such as an evacuation tarp?

	Response Total
Yes	8
No	8
<u>Total Respondents</u>	<u>16</u>

Do you utilize standard backboards to move bariatric patients?

	Response Total
Yes	13
No	3
<u>Total Respondents</u>	<u>16</u>

Do you have patient diagnostic equipment, such as blood pressure cuffs, that are applicable for use with bariatric patients?

	Response Total
Yes	11
No	5
<u>Total Respondents</u>	<u>16</u>

Do you encounter staff injuries related to treating and/or transporting bariatric patients?

	Response Total
Yes	15
No	1
<u>Total Respondents</u>	<u>16</u>

If you have introduced specialized bariatric equipment, has this introduction decreased the number of staff injuries related to bariatric care?

	Response Total
Yes	11
No	5
<u>Total Respondents</u>	<u>16</u>

Where have staff injuries resulting from interaction with bariatric patients occurred?

	Response Total
Neck	2
Upper Back	2
Lower Back	15
Extremity	4
<u>Total Respondents</u>	<u>16</u>

At what point during treatment of the bariatric patient do most injuries occur?

	Response Total
Assessment and Treatment at the patient's side	0
Patient packaging	3
Moving the patient to the ambulance	13
Unloading the patient	0
Transferring the patient to the emergency room bed	0
<u>Total Respondents</u>	<u>16</u>

Do your staff members receive ergonomic training?

	Response Total
Yes	11
No	5
<u>Total Respondents</u>	<u>16</u>